

## CLAIMS

1. Machine for working the soil, of the precision disc harrow type, comprising a chassis (1), carried or dragged, provided with plowing tools formed by at least one front series (2) and rear series (3) of non-driven rotatable discs (4), each disc (4) of the group of discs of a series (2, 3) of discs, being, so as to obtain working of the soil at a constant depth by the discs (4), coupled, independently, by means of a safety device (5), to a support (6), such as a beam, common to the assembly of the discs (4) of the series (2, 3) of discs (4), each safety device (5) permitting the removal, by lateral and/or vertical escape, of the corresponding disc (4) or group of discs (4), beyond a predetermined pressure exerted on the disc or group of discs,

characterized in that each disc (4) or group of discs (4) of a series of discs is, in the condition coupled to its support (6), common to the assembly of the discs of the series (2, 3) of discs (4), driven in rotation about an axis which forms with the longitudinal axis of the support an angle  $\alpha$  at least equal to  $2^\circ$ , preferably comprised within the range  $3^\circ - 40^\circ$ , particularly to confer by construction on the assembly of the discs of the series (2, 3) of discs (4) a value  $\beta_1$  of the opening angle considered as optimum in a position corresponding to a position of least size as to length of the supports (6), each support (6), common to the assembly of the discs (4) of a series (2, 3) of discs (4), being mounted on the chassis (1), to pivot about a vertical axis so as to permit an adjustment of the value of the opening angle of the assembly of discs (4) of the series (2, 3) of discs (4) within a predetermined

angular range without increase substantially the size as to length of the assembly of the machine and without complicating the disc (4) - support (6) connection.

5        2. Soil working machine according to claim 1,  
characterized in that each support (6), common to the assembly of the discs of a series (2, 3) of discs (4), is movable angularly within an angular range at least equal to 2°, preferably comprised between 6 and 25°.

10        3. Machine for working the soil according to one of claims 1 and 2,  
characterized in that the angle  $\alpha$ , formed by the axis of rotation of each disc (4) of a series (2, 3) of discs  
15 (4) with the longitudinal axis of the support (6) of the series (2, 3) of discs (4), and comprised within the range 3° - 4°, is selected to be about 20°.

20        4. Machine for working the soil according to one of claims 1 to 3,  
characterized in that support (6), common to the assembly of the discs (4) of a series (2, 3) of discs (4), and coupled to the chassis (1) by a pivot connection (7) with a vertical axis, is driven pivotably about said  
25 vertical axis by means of a control member (8), such as a jack, preferably controlled as to function from a tractive vehicle of the machine.

30        5. Machine for working the soil according to one of claims 1 to 4,  
characterized in that it comprises two supports (6) of the beam type, positioned respectively one in front of the

chassis (1), the other behind the chassis (1), and each extending over a working width of the machine, each beam (6) being coupled by a pivotable connection (7) to a crosspiece (1B) of the chassis (1), this crosspiece (1B) itself extending between two longitudinal bars (1A) of the chassis (1).

6. Machine for working the soil according to one of claims 1 to 4,

10 characterized in that it comprises four supports (6) of the beam type formed by two supports positioned in front of the machine and two supports positioned behind the machine, these supports (6) covering pairwise a working width of the machine, each support being coupled to the chassis (1) by a pivotal connection (7) with a vertical axis extended substantially in the medial portion of said support (6).

7. Machine for working the soil according to one of claims 1 to 6,

characterized in that each disc (2) of a series (2, 3) of discs is a concave disc of a large diameter, the discs having a reverse concavity from one series (2) of discs to another series (3) of discs on the one hand between series of discs positioned substantially on a same working width of the machine, on the other hand between series of discs axially offset relative to the longitudinal axis of the machine.

8. Machine for working the ground according to one of claims 1 to 7,

characterized in that each disc (4) or group of discs (4) moreover has a camber angle comprised in the range 3 to 20°.

5        9. Machine for working the soil according to one of claims 1 to 8,

characterized in that the chassis (1) is provided with a reference member (9) preferably rotatable, such as a wheel, a roller, common to the assembly of the discs of the  
10 machine, this reference member (9) being positioned preferably behind the last series of discs (4) taken in the direction of advance of the machine, this reference member ensuring adjustment of the depth of the discs (4) working in the soil.

15        10. Machine for working the soil according to one of claims 1 to 9,

characterized in that each disc (4) or group of discs (4) of a series (2, 3) of discs (4) is connected to the  
20 support (6) common to the assembly of the discs of the series (2, 3) of discs (4) by a safety device (5) constituted by at least one helicoidal spring forming at least one winding, preferably at least one and a half windings, so as to create, at the level of the spring, a  
25 region of overlap, one end of the spring being coupleable directly or by means of a connection member to the chassis whilst the other end of the spring is coupleable to the hub of the disc, the spring being oriented such that the winding or windings of the spring tighten by winding up  
30 when the pressure exerted on the disc is greater than the predetermined position pressure to permit a vertical

removal of the disc by raising or a lateral escape of the disc.